1. An apparatus for regulating power allocated to components within a computer system, the apparatus comprising:

a first sensor configured to sense power drawn by a first device within a computer system, the first device having first device resources needed to satisfy functional demand required of the first device;

a first power-monitoring module in communication with the first sensor to monitor the power drawn and configured to monitor the functional demand required of the first device; and

a system control module configured to regulate power allocated to the first device by optimizing use of the first device resources in response to the determination of the power drawn and the functional demand by the first power-monitoring module.

2. The apparatus of claim 1, further comprising a second sensor configured to sense power drawn by a second device within the computer system, the second device having second device resources needed to satisfy functional demand required of the second device, the system control module further configured to regulate power to the second device at least partially in accordance with a parameter of the first device.

3. The apparatus of claim 2, wherein the system control module is further configured to adjust the power levels in the first and second devices in accordance with multiple dependent thresholds determined by the respective functional demands of the first and second devices.

4. The apparatus of claim 2, wherein the parameter of the first device comprises the functional demand of the first device.

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5. The apparatus of claim 1, wherein the system control module is further configured to receive an indication of the temperature of the first device and regulate power to the device in accordance with the indication of temperature and at least one other parameter.

6. The apparatus of claim 5, wherein the system control module is configured to examine parameters of the first device including temperature, power, and functional demand; to determine a malfunction of the first device in response to the examination of the parameters; and to reduce power transmitted to the first device in response to the determination of a malfunction.

7. The apparatus of claim 2, wherein the first and second device resources include at least one of a processor, a memory device, and a device clock.

8. The apparatus of claim 1, wherein the functional demand is selected from the group consisting of a number of operations performed, a frequency of operations performed, a peak value of operations performed, a data transfer rate, and a cache hit ratio.

9. The apparatus of claim 2, wherein the first and second devices are selected from the group consisting of PCI expansion cards, ISA expansion cards, expansion cards connected to a high-speed bus, onboard devices on a motherboard, and a combination thereof.

10. The apparatus of claim 2, wherein at least one of the power-monitoring module and the system control module is located in a location selected from the group consisting of on an expansion card, independent from an expansion card, on a motherboard, and on a device connected to an expansion card.

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11. The apparatus of claim 2, wherein the system control module is configured to control the first and second devices by at least one action selected from the group consisting of shutting off power when functional demand drops below a specified threshold, decreasing the clock speed of selected components when functional demand decreases, increasing the clock speed of selected components when functional demand increases, introducing wait states into logic when functional demand decreases, increasing supplied power when functional demand increases, and decreasing supplied power when functional demand decreases.

12. The apparatus of claim 2, wherein the system control module is further configured to maintain total power consumption of the first and second devices below a selected level.

13. The apparatus of claim 2, wherein at least one of the power-monitoring module and the system control module include functionality provided by modules selected from the group consisting of hardware, software, kernel extensions, drivers, and embedded operating systems.

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14. An article of manufacture comprising a program storage medium readable by a processor and embodying one or more instructions executable by a processor to perform steps of a method for regulating power allocated to components within a computer system, the method comprising:

sensing power drawn by a first device within a computer system, the first device having first device resources needed to satisfy functional demand required of the first device;

monitoring the power drawn and functional demand required of the first device; and

regulating power allocated to the first device by optimizing use of the first device resources in accordance with the functional demand of the first device.

sensing power drawn by a second device within the computer system, the second device having second device resources needed to satisfy functional demand required of the second device, the system control module further configured to regulate power to the second device at least partially in accordance with a parameter of the first device.

15. The apparatus of claim 14, further comprising adjusting the power levels in the first and second devices in accordance with multiple dependent thresholds determined by the respective functional demands of the first and second devices.

16. The article of manufacture of claim 14, wherein the method further comprises regulating power allocated to the second device by optimizing use of the second device resources in accordance with the functional demand of the second device.

17. The article of manufacture of claim 14, wherein the first and second device resources include at least one of a processor, a memory device, and a device clock.

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18. The article of manufacture of claim 14, wherein the first and second devices are selected from the group consisting of PCI expansion cards, ISA expansion cards, expansion cards connected to a high-speed bus, onboard devices on a motherboard, and a combination thereof.

19. The article of manufacture of claim 14, wherein monitoring and regulating are performed on at least one component selected from the group consisting of an expansion card, hardware independent of an expansion card, a motherboard, on a device connected to an expansion card, and a combination thereof.

20. The article of manufacture of claim 14, wherein regulating further comprises at least one action selected from the group consisting of shutting off power when functional demand drops below a specified threshold, increasing supplied power when functional demand increases, and decreasing supplied power when functional demand decreases.

21. The article of manufacture of claim 14, wherein regulating further comprises maintaining total power consumption of the first and second devices below a specified level.

22. The article of manufacture of claim 13, wherein optimizing further comprises at least one action selected from the group consisting of decreasing the clock speed of selected components when functional demand decreases, increasing the clock speed of selected components when functional demand increases, and introducing wait states into logic when functional demand decreases.

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23. A system for regulating power allocated to components within a computer system, the system comprising:

a computer system comprising a processor, main memory, a local bus, and an expansion bus for receiving expansion cards;

a first sensor configured to sense power drawn by a first expansion card operably connected to the expansion bus, the first expansion card having first resources needed to satisfy functional demand required of the first expansion card;

a second sensor configured to sense power drawn by a second expansion card connected to the expansion bus, the second expansion card having second resources needed to satisfy functional demand required of the second expansion card; and

a system control module communicating with the first sensor and the second sensor and configured to regulate power allocated to the first expansion card and optimize use of the first resources in accordance with the functional demand of the first expansion card, and to regulate power allocated to the second expansion card in accordance with multiple dependent thresholds determined by the respective functional demands of the first and second devices.

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